GE Healthcare

WAVE Cabinet 20/50 100-120 V

User Manual

WAVE

Table of Contents

1 Important user information 5

2 Product description 7

3 Safety precautions 11

4 Installation 13

4.1 Placing WAVE Bioreactor units in the cabinet 14

4.2 Placing WAVE control units in the cabinet 18

5 Operation 20

6 Maintenance and service 21

7 Technical specifications 22

1 Important user information

Read this before using WAVE Cabinet

All users must read the safety instructions in the WAVE Cabinet User Documentation to fully understand the safe use of the WAVE Cabinet, before installing, using, or performing maintenance.

Do not operate the WAVE Cabinet in any other way than described in the user documentation. If you do, you may be exposed to hazards that can lead to personal injury, and you may cause damage to the equipment.

Intended use

The WAVE Cabinet has been designed to contain BASE20/50 WAVE Bioreactor™ instruments and WAVE control units.

Safety notices

This user documentation contains WARNINGS, CAUTIONS and NOTICES concerning the safe use of the product. See definitions below.

Warnings

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.

Cautions

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.

Notices

NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

Notes and tips

Note: *A Note is used to indicate information that is important for trouble-free and optimal use of the product.*

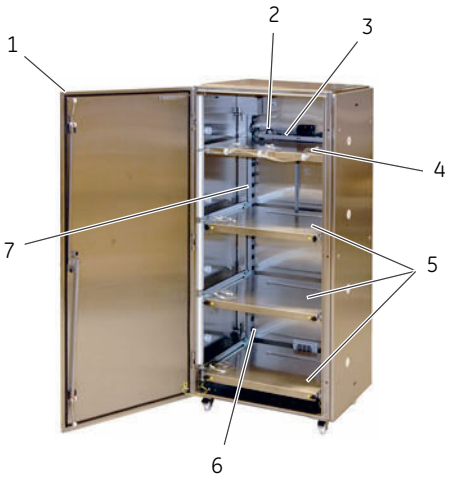
TIP: A tip contains useful information that can improve or optimize your procedures.

Typographical conventions

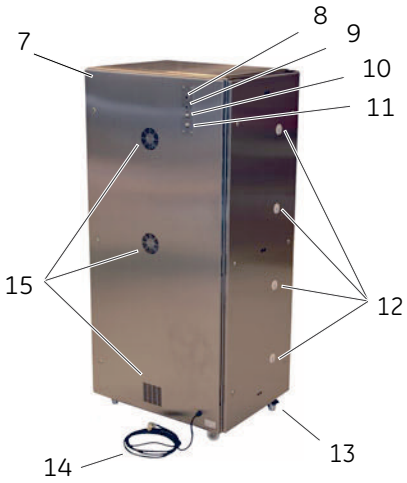
Software items are identified in the text by ***bold italic*** text. A colon separates menu levels, thus ***File:Open*** refers to the ***Open*** command in the ***File*** menu. Hardware items are identified in the text by **bold** text (e.g., **Power** switch).

2 Product description

Illustration



Part	Description
1	Front door
2	Switch for the top shelf, with automatic fuse
3	Top shelf power strip
4	Top shelf for 1 to 3 WAVE control units
5	3 extendable shelves for WAVE Bioreactor units
6	Main switch for the cabinet, with automatic fuse
7	Cabinet power strip



Part	Description
7	Back door
8	Ethernet connection
9	Dataport connection
10	Air inlet
11	CO_2/O_2 inlet
12	Cylindrical apertures to lead hoses through (8)
13	Wheels with lock function (4)
14	Power cord
15	Vents (3)

Hose connections

The cylindrical apertures on the sides are intended for external hose connections for customer applications (typically harvest and feed).

A hose kit for mixed air is provided to allow connection from the WAVE control units to the WAVE Bioreactor units if required. It is up to the customer to utilize these hoses depending on the application and WAVE control units used.

A converter kit with short air-in hoses is included to convert between male and female connections. It should be used to connect air from WAVE Cabinet to WAVE instruments. Remove the short air-in hoses when no WAVE instrument is connected, otherwise the hose will be open.

Electrical connections

WARNING

Protective ground. The WAVE Cabinet must always be connected to a grounded power outlet.

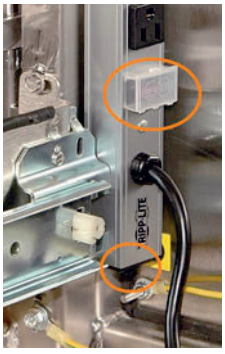
WARNING

Access to power cord. The power cord must always be easy to disconnect.

WARNING

Disconnect power. Always disconnect power from the instrument before performing any installation or maintenance task.

The main switch is located in the far lower left corner seen from the front under a protective cover. Below the switch there is an automatic fuse set for 15 Amps. The main switch with fuse is small and can easily be overseen. If the cabinet appears to be out of power even when the mains cable is connected to live power, check this switch and its automatic fuse. To reset the automatic fuse, push the black fuse knob.
There is also a similar switch with automatic fuse on the top shelf.



Computer connections

Ethernet can only be connected to one control unit as delivered. To connect several control units, an Ethernet switch or router is required. This must be provided by the customer.

The dataport (serial port, Modbus) can be connected to several WAVE instruments in series, for further information see the manual for the respective instrument.

3 Safety precautions

WARNING

Do not operate the WAVE Cabinet in any other way than described in the WAVE Cabinet manual.

WARNING

Protective ground. The WAVE Cabinet must always be connected to a grounded power outlet.

WARNING

Access to power cord. The power cord must always be easy to disconnect.

WARNING

Tip Hazard. The shelf locks must be locked when instruments are placed on the shelves.

WARNING

Tip hazard. Only one shelf at a time should be extended.

WARNING

Tip hazard. Do not sit on the shelves or put heavy loads on the shelves.

WARNING

Heavy object/tip hazard. When the WAVE Cabinet is installed/placed, lock the wheels.

WARNING

Vents. Do not block the ventilation inlets or outlets.

WARNING

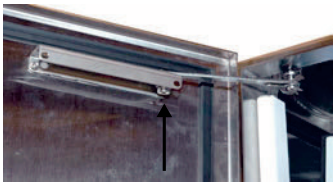
Vents. Do not remove the power plugs of the two ventilation fans from the sockets.

WARNING

Disconnect power. Always disconnect power from the instrument before performing any installation or maintenance task.

NOTICE

Release door stop. Make sure that the stopping device is released before attempting to close the door.



4 Installation

Any equipment connected to WAVE Cabinet must fulfill applicable standards and local regulations.

Site requirements

Parameter	Requirement
Electrical power	100 to 120 V, 50 to 60 Hz, 15 A
Ambient temperature	+4°C to +30°C
Placement	Stable leveled floor
Relative humidity tolerance	20% to 95%, non-condensing

Transport

The WAVE Cabinet can be transported shorter distances on its own wheels.

Unpacking

Unpack the WAVE Cabinet and place it at a stable leveled location indoors. Ensure that the wheels are locked.

Check the equipment for damage before starting assembly and installation. Document any damage and contact your local GE Healthcare representative.

4.1 Placing WAVE Bioreactor units in the cabinet

Introduction

When WAVE Bioreactor units are placed in the cabinet, the top tray should not be attached. First place the WAVE Bioreactor unit (see instruction below), then attach the tray with connections.

WARNING

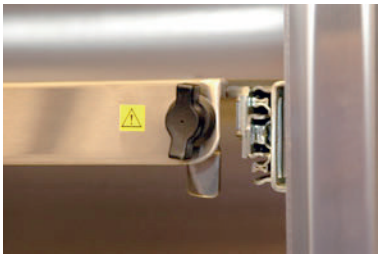
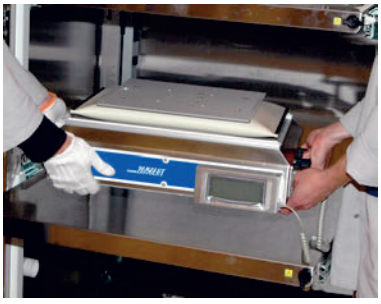
Disconnect power. Always disconnect power from the instrument before performing any installation or maintenance task.

WARNING

Heavy object. Two people are required to lift a WAVE Bioreactor unit safely into the WAVE Cabinet.

Instruction

Follow this sequence to place WAVE Bioreactor units on the shelves.

Step	Action
1	Release the locks for the selected shelf and extend the shelf to its outermost position.
	
2	Lift the WAVE Bioreactor unit onto the shelf, well in front of the guiding rails.
	
3	Connect all hosing and cables to the WAVE Bioreactor unit. Make sure that they are routed so that they will not be stressed or blocked independently of the shelf position.

Step	Action
4	Push the shelf back to its innermost position and make sure that the locks are engaged.

5	Open the rear door.
6	Access the WAVE Bioreactor unit from the rear and pull it towards you and to the right until its rubber feet are positioned in the corners of the guiding rails as shown in the figure.

7	Mount the top tray and connect all its hoses, according to the manual for the instrument.
8	Extend and push back the shelf with the placed WAVE Bioreactor unit making sure that all hoses and cables are routed so that stress and blocking are avoided.

NOTICE

Avoid stress and blocking. It is important that the instrument, cables and hoses are positioned so that stress and blocking are avoided.

Step	Action
9	Lock the shelf locks.

WARNING

Tip Hazard. The shelf locks must be locked when instruments are placed on the shelves.

10 The WAVE Bioreactor is ready. It is now possible to connect the power and turn on the instrument.

Connect the power cord to a power outlet with correct voltage.

WARNING

Protective ground. The WAVE Cabinet must always be connected to a grounded power outlet.

WARNING

Access to power cord. The power cord must always be easy to disconnect.

11 Make sure that the wheels are locked.

4.2 Placing WAVE control units in the cabinet

Introduction

This section describes how to install WAVEPOD™ control units in the WAVE Cabinet. Other small WAVE control units, for example CO2MIX20, can be installed in a similar way.

WARNING

Disconnect power. Always disconnect power from the instrument before performing any installation or maintenance task.

Instruction

Follow this sequence to place WAVE control units on the top shelf.

Step	Action
1	Lift the first WAVE control unit onto the top shelf.

2	Orient the unit so that the attachment points on the side are easily accessed.

Step	Action
3	Attach all hoses and cables according to the manual for the WAVE control unit.
4	Move the unit as far as possible to the side to make room for subsequent units. Make sure the rubber feet are not pushed over the shelf edge.
5	Continue to place the subsequent units, following the sequence described in step 1-4.
6	When all (up to three) control units have been placed and connected, arrange them so that the space between them is as evenly distributed as possible. Make sure that no cables or hoses are stressed and that hoses are not blocked due to sharp bends.

Step	Action
7	Connect the power cord to a power outlet with correct voltage.

WARNING

Protective ground. The WAVE Cabinet must always be connected to a grounded power outlet.

WARNING

Access to power cord. The power cord must always be easy to disconnect.

Step	Action
8	Make sure that the wheels are locked.

5 Operation

Operation

For information on operation, see the manuals for the respective WAVE instrument.

6 Maintenance and service

Cleaning

Keep the WAVE Cabinet dry and clean. Use appropriate cleaning detergent on the stainless steel surfaces of the WAVE Cabinet. Take great care not to spill anything on the movable parts of the shelves or on any electrical equipment.

Service

Contact GE Healthcare if service is required. See the back of this manual for contact information.

7 Technical specifications

Parameter	Value
Electrical power	100 to 120 V ~, 50 to 60 Hz, 15 A
Dimensions (H × W × D)	2082 × 1016 × 790 mm
Weight	296 kg
Ambient temperature	+4 to +30 °C
Placement	Stable leveled floor
Relative humidity tolerance	20% to 95%, non-condensing
Max pressure, air inlet	0.2 bar
Max pressure, CO_2/O_2 inlet	1 bar

For local office contact information, visit
www.gelifesciences.com/contact

GE Healthcare Bio-Sciences AB
Björkgatan 30
751 84 Uppsala
Sweden

www.gelifesciences.com/wave

GE, imagination at work and GE monogram are trademarks of General Electric Company.

WAVE, WAVE Bioreactor and WAVEPOD are trademarks of GE Healthcare companies.

All third party trademarks are the property of their respective owners.

© 2009 General Electric Company – All rights reserved.
First published Nov. 2009

All goods and services are sold subject to the terms and conditions of sale of the company within GE Healthcare which supplies them. A copy of these terms and conditions is available on request. Contact your local GE Healthcare representative for the most current information.

GE Healthcare Europe GmbH
Munzinger Strasse 5, D-79111 Freiburg, Germany

GE Healthcare UK Limited
Amersham Place, Little Chalfont, Buckinghamshire, HP7 9NA, UK

GE Healthcare Bio-Sciences Corp.
800 Centennial Avenue, P.O. Box 1327, Piscataway, NJ 08855-1327, USA

GE Healthcare Japan Corporation
Sanken Bldg.3-25-1, Hyakunincho Shinjuku-ku, Tokyo 169-0073, Japan

imagination at work

28-9651-84 AA 12/2009